



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,626	11/12/2003	Shinichi Takahashi	0941.68725	7983

7590 02/22/2007
Patrick G. Burns, Esq.
GREER, BURNS & CRAIN, LTD.
Suite 2500
300 South Wacker Dr.
Chicago, IL 60606

EXAMINER

KAYRISH, MATTHEW

ART UNIT	PAPER NUMBER
----------	--------------

2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/706,626	TAKAHASHI, SHINICHI	
	Examiner	Art Unit	
	Matthew G. Kayrish	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection. The previous action, mailed on 12/12/2006, has been vacated because the attorney called to inform the examiner that there was uncertainty with the reference used to make the 102 rejections. The wrong patent number was listed in the previous office action creating ambiguity. A new response period has been set.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Utsunomiya (US Patent Number 6072662).

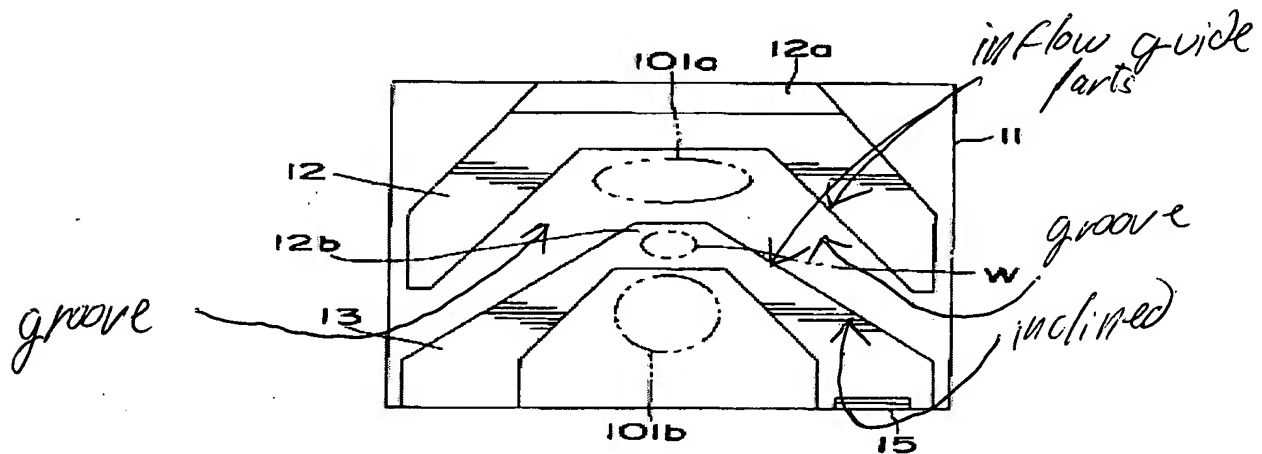
Regarding claim 1, Utsunomiya discloses:

A head slider for a magnetic disk lifted above the magnetic disk by airflow generated by rotation of the magnetic disk, said head slider comprising:

A disk-facing surface having an air bearing surface (figure 7, surfaces of items 12 & 13) and a recessed portion (figure 7, area between items 12 & 13) located behind said air bearing surface when viewed in a direction of the airflow;

An airflow guide part (see figure 7 on page 3) located in said recessed portion and guiding the airflow along the disk-facing surface of said head slider toward sides of the disk-facing surface.

Wherein the airflow guide part includes a first guide groove formed between both sides of the disk-facing surface (figure 7 below).



Regarding claims 2 and 5, Utsunomiya discloses:

The head slider as claimed in claim 1, wherein the airflow guide part is formed to extend in directions each inclined at an angle with respect to a flow direction of the airflow (figure 7 above).

Regarding claim 3, Utsunomiya discloses:

The head slider as claimed in claim 1, wherein the airflow guide part (figure 7, item 101a) includes a capturing part that captures dust included in the airflow (columns 5 & 8, lines 52-58 & 38-42, implies that dust gets trapped in negative pressure regions).

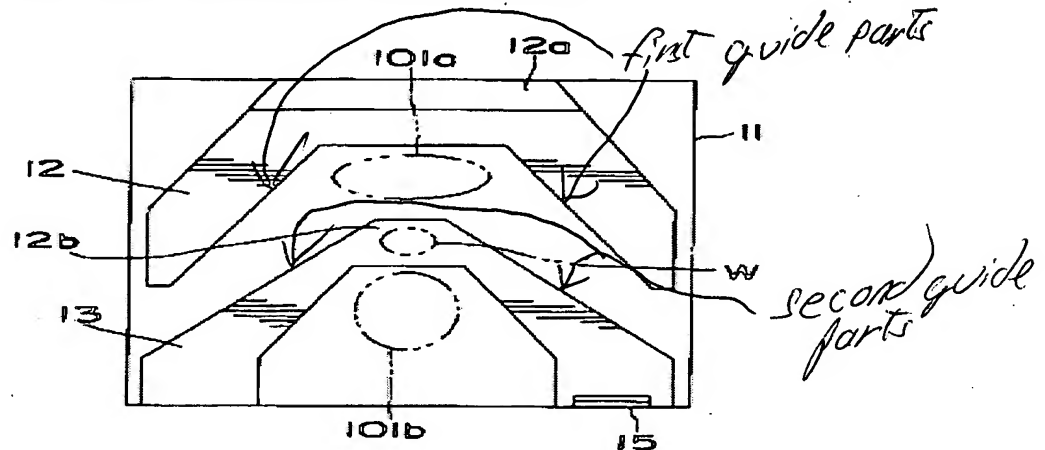
Regarding claim 4, Utsunomiya discloses:

The head slider as claimed in claim 1, wherein the airflow guide part comprises:

Art Unit: 2627

A first guide part formed to extend from the vicinity of the center of the disk-facing surface to both sides of the disk-facing surface (figure 7 below); and

A pair of second guide parts formed on opposing side surfaces of said head slider and continuing with said first guide part (figure 7 below):



Regarding claim 6, Utsunomiya discloses:

The head slider as claimed in claim 4, wherein one of the first and second guide parts includes a capturing part that captures dust included in the airflow (figure 7, item 101a is within the first and second guide parts).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsunomiya, in view of Nakano (US Patent Number 6801399).

Regarding claim 7, Utsunomiya discloses:

The head slider as claimed in claim 1, wherein the airflow guide part comprises:

A first guide groove formed to extend from the vicinity of the center of the disk-facing surface toward both sides of the disk-facing surface (figure 7, inclined first and second guide parts make the guide groove); and

Utsunomiya fails to specifically disclose:

A pair of second guide grooves formed on opposing side surfaces of said head slider and communicating with said first guide groove.

Nakano discloses:

A pair of second guide grooves formed on opposing side surfaces of said head slider (figure 15, item 10c & 10d) and communicating with said first guide groove (figure 15, items 10c & 10d are in connection with the rear out flow area [6]).

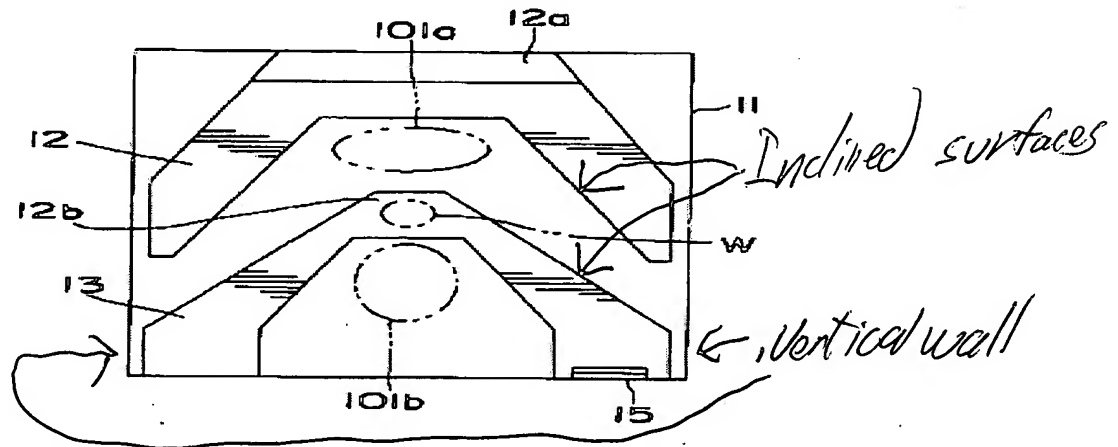
Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Utsunomiya with second grooves that are in communication with the first grooves, as taught by Nakano, because this will add another negative pressure region, which will help the head slide to stay in contact with the disk surface.

Regarding claim 9, Utsunomiya discloses:

Wherein, in the first guide groove, an inflow-side wall along which the airflow flowing along the disk-facing surface enters the first guide groove is an inclined surface,

Art Unit: 2627

and an outflow-side wall along which the airflow flowing along the disk-facing surface is discharged is a vertical surface (see figure 7 below).



Regarding claim 10, Utsunomiya fails to specifically disclose:

Wherein the disk-facing surface includes a pair of front pads, located in front of and adjacent to said recessed portion when viewed in a direction of the airflow, and further wherein the airflow is guided between said front pads toward said airflow guide part.

Nakano discloses:

Wherein the disk-facing surface includes a pair of front pads (figure 15, items 7a & 7b), located in front of and adjacent to said recessed portion (figure 15, the center portion of the slider) when viewed in a direction of the airflow, and further wherein the airflow is guided between said front pads toward said airflow guide part (figure 15, item 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Utsunomiya with an airflow-inlet, as taught by Nakano, because the airflow inlet provides a path for air to rush past the second guide

grooves. This will therefore create a negative pressure region behind the front pads. The negative pressure behind both pads will stabilize the head slider to a uniform flying height above the disk.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsunomiya, in view of Nakano in further view of Utsunomiya (US Publication Number 6072662).

Regarding claim 8, Utsunomiya, in figure 7, in view of Nakano fail to specifically discloses:

Wherein one of the first and second guide grooves includes a capturing groove that captures dust included in the airflow, and the capturing groove is formed deeper than the first and second guide grooves.

Utsunomiya, in figure 17, discloses:

Wherein one of the first and second guide grooves includes a capturing groove that captures dust included in the airflow, and the capturing groove is formed deeper than the first and second guide grooves (figure 17, recess indicated by letter B).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include recesses portions which are formed deeper into the head slider than the guide grooves, as taught by Utsunomiya, because this will help to balance the head slider for a more accurate read/write signal from the magnetoresistive head element.

Art Unit: 2627

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew G. Kayrish whose telephone number is 571-272-4220. The examiner can normally be reached on 8am - 5pm M-F.

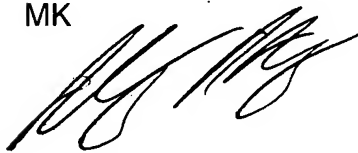
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew G. Kayrish

2/16/2007

MK


2/16/2007
WAYNE YOUNG
SUPERVISORY PATENT EXAMINER